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TIMETABLE REMINDER: AN OFFLINE ANDROID ALGORITHM

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ABSTRACT

This paper introduces and solves one of the timetabling problems in Nigerian Universities with special reference to Federal University Lafia (FULafia). FULafia is one out of the twelve new Universities established by the past President of the Federal Republic of Nigeria (President Goodluck Ebele Jonathan). It has two (2) Campuses (Take-off site and the Permanent site) and offers programmes in three (3) faculties. This offline android program is specially built to the taste of Federal Universities with consideration to Federal University Lafia (FULafia) Timetable Scheme and works specifically with an android operating system. This lecture Android Time Table Program helps both students and lecturers in reminding them of their respective upcoming lectures, lecturer in charge of the Course, time of lectures and venues everyday according to FULafia days of lectures. It does that every fifteen (15) minutes before the actual lecture time.

Key Words: *Timetable, Reminder, University, Courses, Institution, offline, android.*

INTRODUCTION

Working on timetabling problems in institutions of higher learning like Universities has been difficult tasks and are complexes. Timetabling issues and real world University problems are demanding requiring expensive resources and huge amount of time. Redressing these complexes of problems and proffering solutions to courses timetable problems is an issue of concern and necessity. Many researchers in Operations Research have filled some gaps in University timetabling problems. A Simpler and Easier Approach of settling timetable issues (Heuristically) has been handled for assessing and solving Graph Colouring Problems, the principal with the aim of assigning and schedule events one after the other taking into consideration the most difficult ones first [(Carter and Laporte, 1996), (Schaerf, 1999a), (Burke and Petrovic, 2002)]. These works on meta-heuristic approaches such as simulated anneling, tabu search and genetic algorithms for high institutions timetabling have also been researched on. In this research work, we optimized the gap between two courses and venues that a student and a lecturer has and programmed an offline android reminder algorithm fifteen (15) minutes in between them.

Recent literature reveals that most methods such as Heuristic use small neighbourhood structures in their search techniques and algorithms. This lacuna has encouraged us in developing a program that investigates into a larger than small neighbourhood structures to solve the problem. An offline android program that is specially built to the taste of Federal University Lafia (FULafia) Timetable Scheme. This lecture Time Table Program helps both students and lecturers in reminding them of their respective upcoming lectures everyday according to FULafia days of lectures. It does that every fifteen (15) minutes before the actual lecture time. Abdullah (2006) revealed that campus time table problems are a specific type of scheduling problems and are mainly concerned with the assignment of events to timeslots subjects to limitations and constraints with the resultant solution constituting a timetable. The work of Wren (1996), defined timetabling as: "the allocation, subject to constraint, of given resources to objects being placed in space time, in such a way as to satisfy as near as possible a set of desirable objectives". To assign a number of courses into a limited number of timeslots and lecture rooms with the aim of minimizing the violations of a set of constraints is tasking. The research carried out by Schaerf (1999a) classified educational timetabling into three such as: School timetabling; Course timetabling and Examination timetabling.

COURSES AND SUBJECTS TIMETABLING PROBLEMS

The research carried out by Carter and Laporte (1998) defined timetabling as a "multidimensional assignment problem in which students, teachers (or faculty members) are assigned to courses, course sections or classes; events (individual meetings between students and teachers) to classrooms and times". Course timetabling also called Class or teacher timetabling is assigning of a set of courses into lecture rooms and timeslots within a week as well as teachers and students aloted to courses so that the meetings can take place. Werra (1996 and 1997) reveals some combinatorial models which draw upon graph colouring for simple class teacher timetabling problems. The research of Carter and laporte (1998) decomposed the course scheduling problems into five sub problems namely: course timetabling; class-teacher timetabling; student scheduling; teacher assignment and classroom assignment.

BRIEF HISTORY OF FEDERAL UNIVERSITY LAFIA, NIGERIA

The institution in context is called Federal University Lafia (FULafia). FULafia is a young but fast growing Nigerian University cited at the North Central geopolitical zone, specifically, Lafia metropolis in Nasarawa State. It was established in February 2011 by the Federal Government of Nigeria during President Goodluck Ebele Jonathan's administration. It is one of the Twelve (12) new Federal Universities established to expand access to, and improve quality of, higher education in Nigeria.

MISSION OF FULafia

Training of graduates and equipping them with skills for socio-economic development.

RELEVANCE OF FULafia

To foster the economic development of the immediate environment and of Nigeria in general through the sharing and dissemination of scientific, technological, environmental and cultural knowledge.

VISION OF FULafia

To be a renowned institution of learning, research and innovation, for positive socio-economic transformation of the nation.

THE CORE VALUES OF FULafia

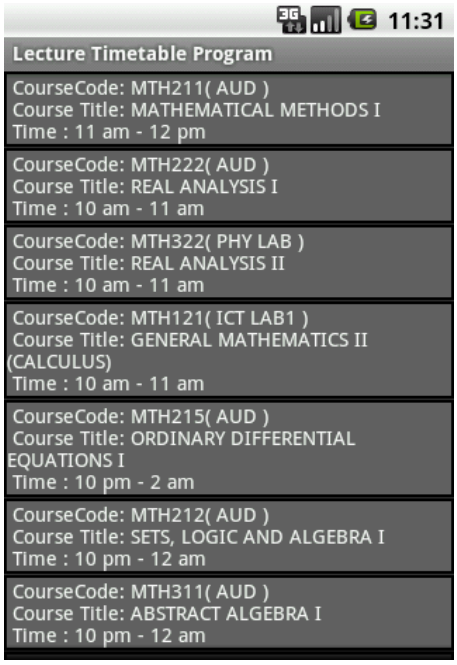
Integrity, Innovation and Excellence.

FACULTIES AND DEPARTMENTS IN FULafia

FULafia operates on two campuses; the take-off site along Akunza-Obi road and the permanent site along Makurdi road both in Lafia, the state capital of Nasarawa State in North Central Geopolitical Zone, Nigeria in West Africa. The Faculty of Science holds most of it lectures at the permanent site with eight large lecture halls and three laboratories while the other faculties hold their lectures at the take-off site with ten lecture rooms and the school's auditorium with a sitting capacity of three hundred.

The three faculties and fifteen departments are as follows:

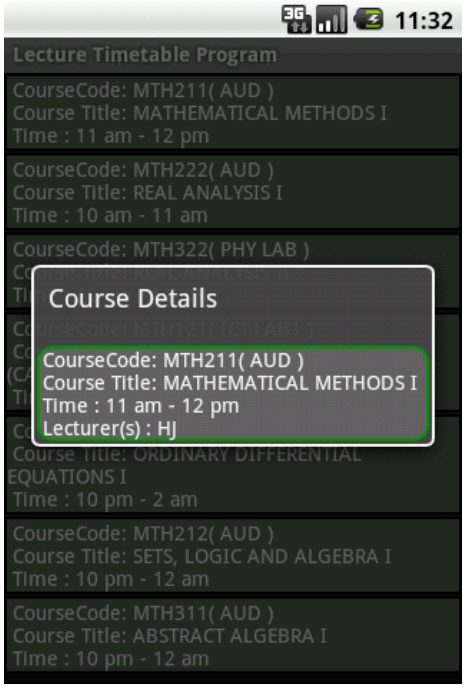
Faculty of Science with eight departments namely: Biochemistry, Botany, Chemistry, Computer Science, Mathematics, Microbiology, Physics and Zoology. Faculty of Social Sciences with four departments namely: Economics, Political Science, Sociology and Social Work while the Faculty of Arts with four departments namely: English, History, Theatre and Media Arts and Visual and Creative Arts.



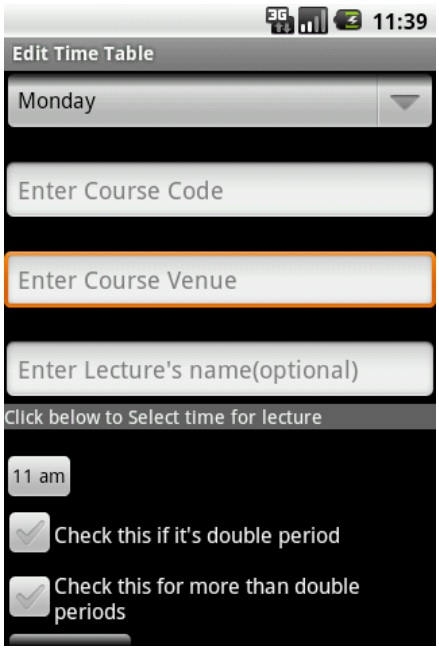
Displays day-to-day courses (from Mon. to Fri.) as shown. This involves course code, course title, lecture time, venue and lecturer's name

ABOUT THE PROGRAM

This program is an offline android timetable reminder algorithm specially built to the taste of Federal University Lafia (FULafia) Timetable Scheme. It works with Andriod operating system. This lecture Time Table Program helps both students and lecturers in reminding them of their respective upcoming lectures everyday according to FULafia days of lectures. It does that every fifteen (15) minutes before the actual lecture time.



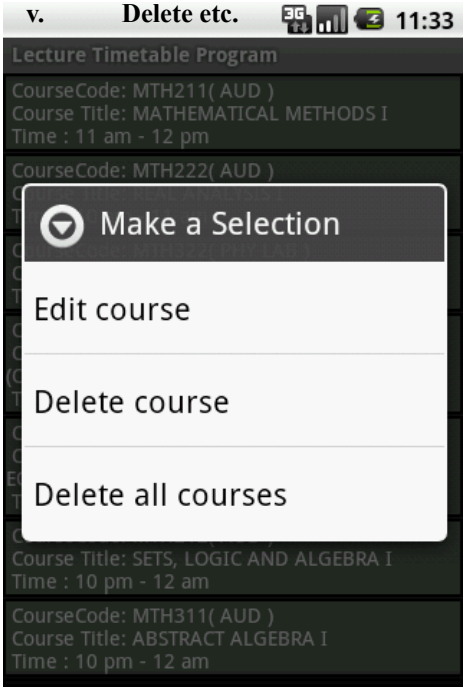
Shows details for any particular course selected.

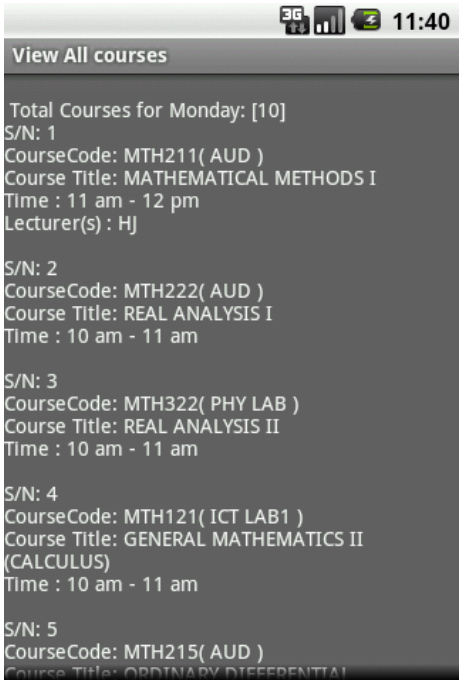


This interface is the front-end of the program. Here, one enters the required course details.

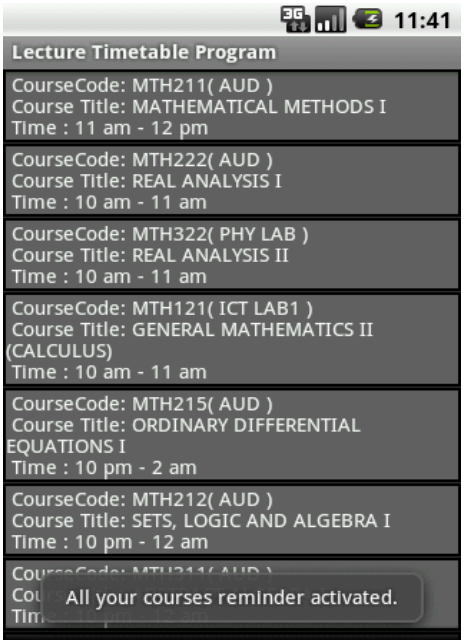
A course can be edited when long-pressed on as follows :

i. **Change title.**
ii. **Change code.**
iii. **Change lecturer's name**
iv. **Change venue**
v. **Delete etc.**

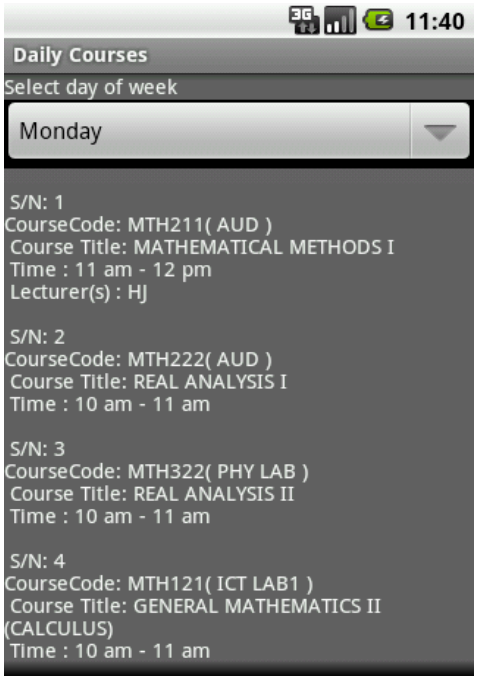




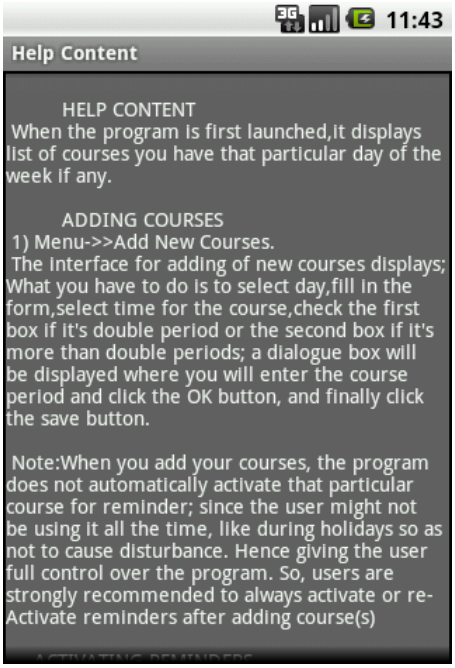
All Courses can be viewed at once



Lecture time reminder and alarms are available; can be activated or deactivated.



Courses can be viewed by days selected.



This is the program's manual; this interface explains in details on how to efficiently use the program with ease.

ALGORITHM OF FULafia TIME TABLE GENERATOR

<Pre-requisites>>>>

a. Make sure that Java is properly installed on your PC.

>> When you first launch the program, click on "LECTURE TIMETABLE" Tab.

<<How to test this program>>

Step1

a. Enter 'welcome' as the password. This is just for test purpose.
b. Click on "generate new Course template" to get spread sheet to work with.
c. The template comes with an example data in the first row. Clear these data and fill out the spread sheet with the appropriate data.
d. Click on the "Browse" and navigate to the sheet you just filled in step (b).

Step2

Repeat exactly what u did in step1 above.

Step3

a. Select the official days of lectures
b. And indicate those days with lecture break time (free time) respectively.

Step4

a. Enter the lecture start and end time.
b. Click the drop down to select those days with lecture break time (free time) and select the start time of the break and break duration
c. Enter the reason for break
d. Click on "Add" to persist the inputs
e. Click on "Reset" if you made any mistake

Step5

This is for dispatching the generated time table to the respective time table officers in the respective departments.

Step6

Click on "Generate Timetable" to get the time table generated automatically. After the generation is complete, the program will ask you were to save it.

CONCLUSION

This program solves a specific Timetable Scheme challenge of lateness to lecture rooms by students and lecturers of the Federal University Lafia (FULafia). This lecture Time Table Andriod Program helps both students and lecturers in reminding them of their respective upcoming lectures, nature of course(s), venue of the lecture, lecturer taking the course everyday according to FULafia days of lectures. It does that every fifteen (15) minutes before the actual lecture time. The extension of the program will handle the direction to the lecture rooms when on campus.

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